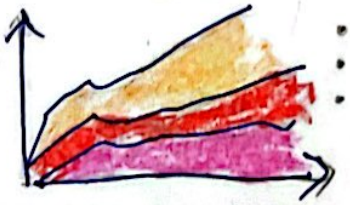
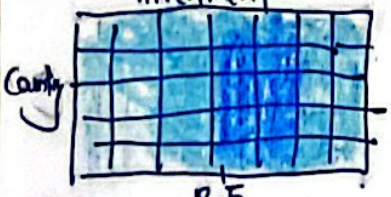
1. Ideas

a) Choropleth map to show renewable energy share

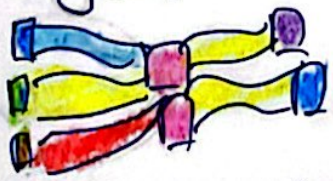
b) Stacked Area Chart to show energy generation



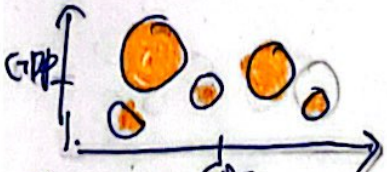
c) Heatmap shows top 10 investment



d) Sankey chart



e) Scatter plot shows relationship between CO_2 and GDP



f) Bubble Plot shows top 10 country investment in R.E

g) Radar Chart shows GHG Emissions

h) Death Rate from Air Pollution

i) Top 5 Death Risk factor

j) Proportion of RE access country

k) Fossil fuel consumption by type

2. Filter

1a) is not suitable as it has too many categories

1j) is not needed as 1a) has already shown the same thing

1c) is not required and can be replaced by 1f) with a filter that can select the renewable energy type

3) Categories

Categorical
- Country, Name
- Renewable Energy Type
- Disease Burden Type
- Fossil fuel Type

Quantitative
- Renewable Energy generation
- GHG Emissions
- Fossil fuel consumption

Country Name = Choropleth Map
Renewable Energy Type = Stacked Area
Disease Burden = Radial Bar Chart
Fossil fuel Type = Streamgraph
GHG Emissions = Pie chart
Energy flow = Sankey Chart

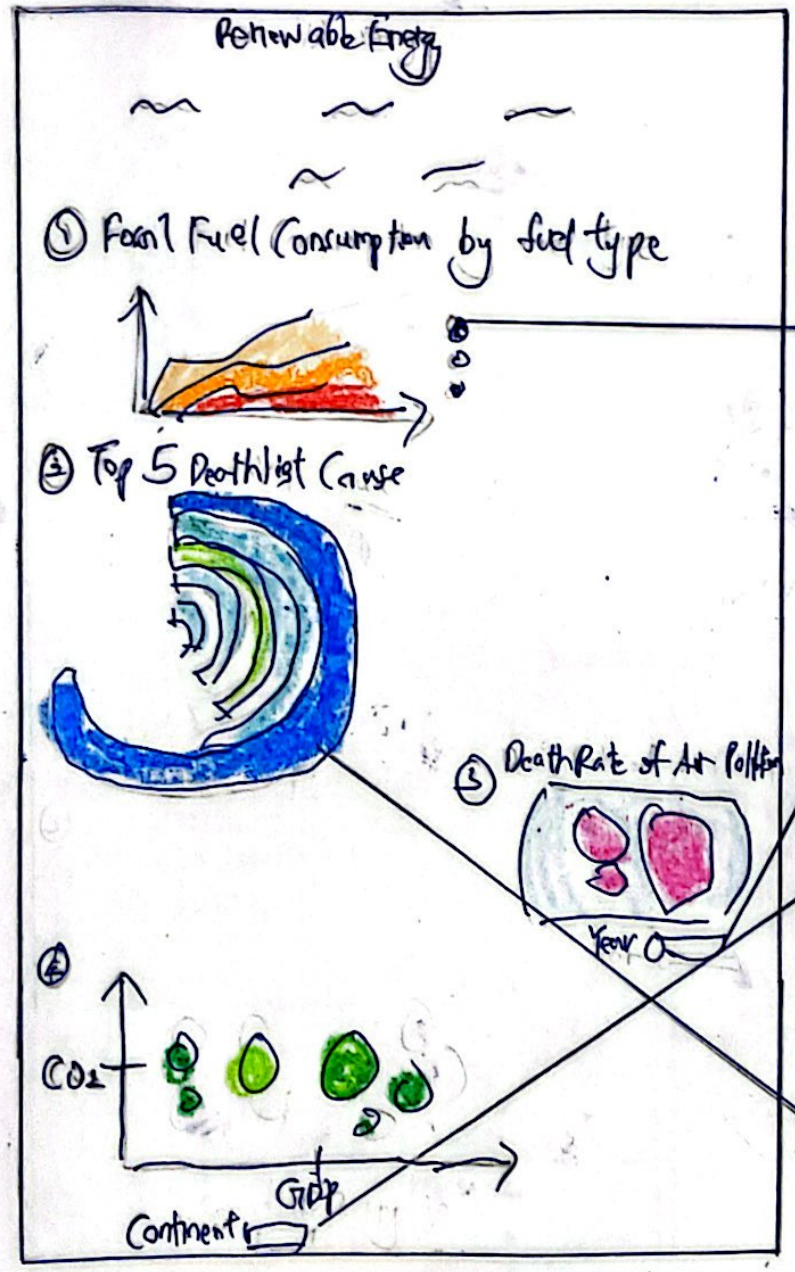
4) Combine and Refine

- 1h) and 1i) are redundant in somehow as 1i) already shown the death rate of air pollution
- Use choropleth map to show the global energy share
- Use Sankey chart to show energy flow
- Use radial bar chart to show top 5 risk factor

5) Questions

1) Is the Sankey Chart can show the flow of energy correctly
2) If use 2 maps, would it be too complexed
3) How to create a good storytelling by starting from the background of traditional energy

Layout



Title = Renewable Energy
Author: Liaw Hang Sheng
Date: 7/10/2024
Sheet: 2
Task: Design Visualization for Renewable Energy

Operators:

① Legends are clickable, and user can focus on a specific region by clicking the legend

② Year Slider allows user to filter the data distribution by year, so user can see the changes over these years

③ A continent filter allows user to select the continent that they want to look at, this can help user to focus the data distribution easily

④ When hovering the bars, the color of the bars will be changed, indicating the bar is currently viewing by user

Focus:

① Stacked Area Chart: x-axis with years, y-axis with the amount of fuel type's use
- Color Hue is used
- Legends are clickable

② Radial Bar Chart: shows the amount of death by top 5 risk factor,
- When hovering it, color will change, indicating this is currently selecting
- Colour saturation is used

③ Choropleth Map: Color Luminance is used to show the density of death rate
- Additional annotations to point out the interesting part

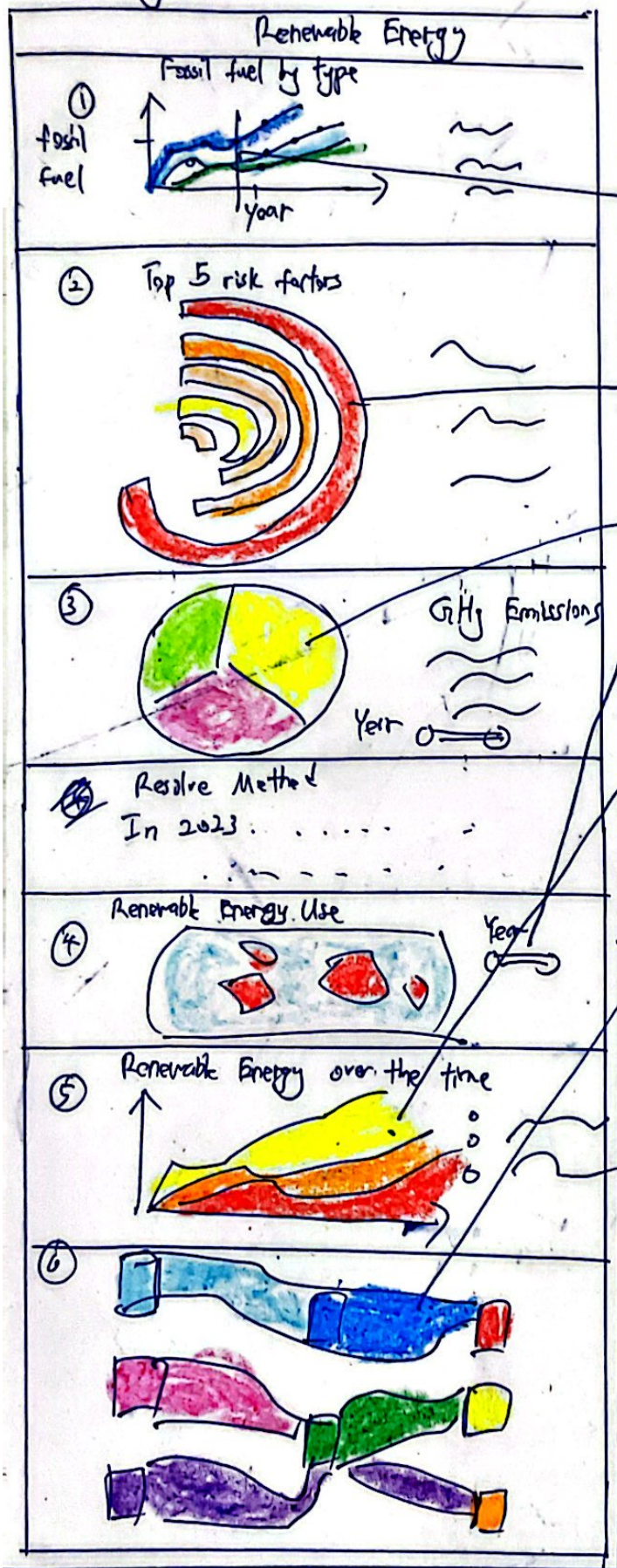
Discussions:

Advantages:
- User-interactions are friendly
- The flow of this storytelling is well, clear and easy-to-read
- Color selection is good

Disadvantages:
- Too less chart, cannot show the whole concept of this topic
- No sightlines and Layout
- Spacing is too large, can be improved

Author: Liew Hang Sheng
Date: 7/10/2024
Sheet: 3
Task: Create Data Visualization for Renewable Energy

Layout



Operations

① Line chart with a movable median line, user can know the median value of the specific time by moving this line

② When hovers the bar, the colour will change to brighter, showing it is selecting by user

③ Year filter, shows the amount of each ghg over the years

④ Year filter, same as above, shows the amount of renewable energy use over the years
- By clicking on a region, other regions will be shaded

⑤ When selecting on a region, other region will automatically be shaded, showing this region is currently selected by user

⑥ The thicker the link, the larger the amount,

Focus

①&②&③: These 3 graphs show the traditional energy source, this is a brief history about how human used to get energy from?
- Colour Hue is used for categories in ① & ③, but colour luminance is used for ②

④ shows the latest information of renewable energy
- colour luminance is used
- interactions with region is allowed
- year slider

⑤ shows the info of renewable energy over the years
- colour Hue is used
- Region are clickable

⑥ The final conclusion of renewable energy, the larger amount has thicker link and bigger node

Discussions:

Advantages:
- The storytelling is good, starts from history
- Enough number and complexity chart

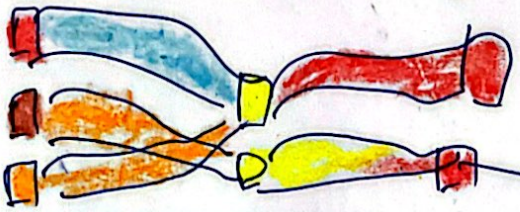
Disadvantages:
- Sightline and layout could be further improved
- Last diagram (sankey chart) might need further explanation as not everyone knows ghg

Layout

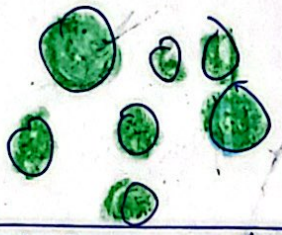
The Green Economy : Renewable Energy

① Renewable Energy across the world

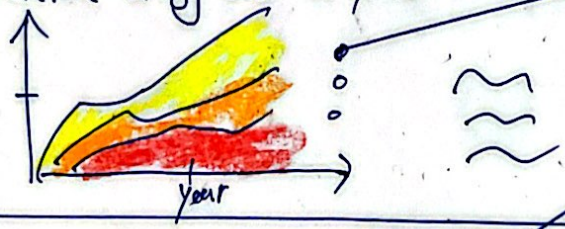
② How can we transform the energy ?



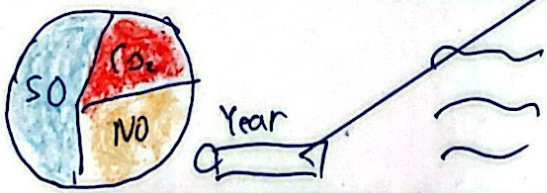
③ The investment in renewable energy



④ Renewable Energy over the years



⑤



Discussion

Advantages :

① The number of graphs is enough

② Some graphs have short description, which can increase the level of understanding for user

③ Each graph has interactions to play with

Disadvantages :

① Graphs might be too simple ?

② If the pie chart has too much categories, is it okay ?

③ Will the sankey chart be efficient to show the flow ?

Title : The Green Economy : Renewable Energy

Author : Liaw Hang sheng

Date : 7/10/2021

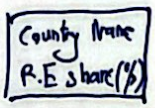
Sheet : 4

Task : Create Data Visualization for Renewable Energy

Operations :

→ Regions are clickable, when user click on a region, other region will be shaded,

- Tooltip



→ The node and link are both clickable, when user hover it, the colour will change, indicating this is currently selecting by user

→ A filter allows user to select the r.e type of investment

→ Legends are clickable, and when user click it, other regions will be shaded

→ Year slider allows user to filter the data

Focus :

① The choropleth map is used to give an overview of this topic, so it put at the first

② The sankey diagram shows the flow of energy

- Colour rainbow is used ?
- Can put redrant icon ?
- The dataset is enough to create this ?

③ Each country represent a bubble in the bubble chart, the larger the investment, the larger the circle

- When user click on a bubble, a tooltip

will show

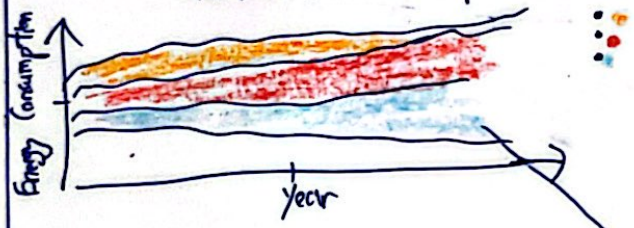
④ This stacked area chart shows the changes of renewable energy over these years

- x-axis is year, y-axis is the amount
- colour Hue is used

Layout

Renewable Energy

Global Fossil Fuel Consumption



Greenhouse Gas Categories

Road
Commercial
Ag
Shipping

Global Renewable Energy Share

Renewable Energy Generation

GHg Emissions

Global Electricity

Top 5 Deadliest Risk Factors

Title: Final Design Sheet
Author: Liaw Hang Sheng
Date: 12/10/2024
Sheet = 5
Task: Final Visualization Dashboard

Operation

(1) One clear, big and bold title to capture the first attention of user, with a short paragraph describe the topic and what this visualization
(2) Subheading for each graph should not larger than the main title, but also need to be enough size and suitable font type
(3) The regions are clickable, and once clicked, other region will be shaded
(4) The word are clickable, and once clicked, the selected word will be enlarged, and

[Percentage] will be shown

(5) Year slider can be used to filter the data
(6) legends are clickable, and once clicked, other regions will be shaded
(7) sankey chart are clickable, and once click

[Type = Amount] will be shown

(8) Bars are ~~hovered~~ clickable and once click, colour will changed to light yellow

Details

Algorithms: - Use R to filter data and aggregate common attributes
- Estimated Time: 3 days for data collection
5 days for webpage

Focus:

Focus on the color channel used, the overall theme of this visualization, the storytelling, the flow of each graph. Each graph should have a similar theme, and the interactions should be worked in quickly and user-friendly. Also, annotations are required in choropleth map. Furthermore, can add a short paragraph for each graph, to let